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Evaluation of a Restoration System for Sandhills Longleaf Pine Communities

K.W. Outcalt¹

Abstract — Longleaf pine (*Pinus palustris* Mill.) communities, which once covered 60 to 80 million acres, have declined to near 3 million acres. To reverse this trend will require restoration of damaged areas. The study purpose was to evaluate the effectiveness of hexazinone for restoring longleaf pine communities on dry sandhills sites. Three areas were treated with hexazinone (2 lbs ai/acre) by spot gun application followed by v-blade planting of containerized longleaf pine. Response of the plant community was monitored by collecting cover data from transects in treated and untreated control plots before and after treatment application. The hexazinone reduced turkey oak (*Quercus laevis* Walt.) cover from 6 to 0.4 percent. All areas were dominated by wiregrass (*Aristida stricta* Michx.) prior to treatment. The mechanical disturbance caused by v-blade planting reduced wiregrass cover from 51 to 37 percent and created bare soil on 32 percent of the area. Wiregrass recovered the following season to 49 percent cover while bare soil declined to 7 percent. There were species gains and losses on control and treated plots, but there were no species which were specifically eliminated from the community. Thus, the treatment was successful at reducing the woody component of the community and promoting the successful re-establishment of longleaf pine without undue long-term harm to the other species of the plant community.

INTRODUCTION

Longleaf pine (*Pinus palustris* Mill.) ecosystems once occupied perhaps as much as 80 million acres in the Southeastern United States, stretching from southeastern Virginia south to central Florida and west into eastern Texas. These fire-dependent ecosystems have been intensively exploited since colonial times, with little regard for regeneration, resulting in a decline to less than 3 million acres today. The continuing reduction of this important forest type carries with it a risk to the myriad of life forms characteristic of, and largely dependent on, longleaf pine ecosystems. Extreme habitat reduction is the main cause for the precarious state of at least 191 taxa of vascular plants. A committed effort to restore and manage longleaf pine ecosystems will help insure a future for an important part of this nation's natural heritage. The purpose of this study was to assess the effect of a restoration system, using hexazinone and V-blade planting of longleaf pine, on the understory plant community.

METHODS

- Study Location - Ocala National Forest, central highlands region of Florida, USA.
- Chose three stands (i.e. blocks) dominated by scrub oaks for restoration treatment.
- In each block a square 0.6 acre control plot was established.
- All but control area was treated with spot gun application of hexazinone.
- Application rate 2 lb a. i./ acre on 6 by 6 foot grid in late May, 1991.
- Plant cover assessed along 50 foot line transects.
- 10 transects in treated part and 2 in control portion of each stand.
- Data collected pretreatment (May, 1991), 1st season (Oct., 1991), 2nd season (Oct., 1992).

¹ USDA Forest Service, Gainesville, FL., USA.

RESULTS

- There was a significant increase in wiregrass (*Aristida stricta*) on control sites the 1st season.
- There were no other significant changes in plant species cover on control sites.
- A significant reduction in wiregrass occurred on treated sites the 1st season.
- By 2nd season wiregrass had recovered to pretreatment level. Wiregrass declines resulted mostly from scalping during planting as shown by corresponding increase in bare soil.
- Broomsedge (*Andropogon virginicus*) also declined initially but then recovered.
- Hexazinone reduced turkey oak (*Quercus laevis*) cover. Gopher apple (*Licania michauxii*) cover declined but not by a significant amount.
- Cover of *Balduina angustifolia*, *Eupatorium compositifolium*, *Pityopsis graminifolia*, *Polygonella gracilis*, and *Sorghastrum secundum* increased the second season on treated areas.
- There were no significant changes in cover for any of the other plant species in the community.
- Hexazinone treatment reduced the importance of turkey oak in the community.
- Soil disturbance from the V-blade increased bare soil the 1st season but it declined rapidly and by the 2nd season wiregrass again dominated all areas.
- Plant species richness increased on treated areas from species invading bare soil microsites.